

REMARKS

In the non-final Office Action, the Examiner rejected claims 1-11, 13-16, 18-20, and 22-26 under 35 U.S.C. § 103(a) as unpatentable over Tanabe et al. (U.S. Patent No. 5,740,156). The Examiner objected to claims 12 and 17 as dependent upon a rejected based claim, but would be allowable if rewritten in independent form to include all of the features of the base claim and any intervening claims. The Examiner allowed claim 21.

By this Amendment, Applicants amend claims 24-26 to improve form. Applicants appreciate the identification of allowable subject matter, but respectfully traverse the Examiner's rejection under 35 U.S.C. § 103. Claims 1-26 remain pending.

In paragraph 2 of the Office Action, the Examiner rejected claims 1-11, 13-16, 18-20, and 22-26 under 35 U.S.C. § 103 as allegedly unpatentable over Tanabe et al. Applicants respectfully traverse the rejection.

Claim 1, for example, is directed to an interconnect network for operation within a communication node. The interconnect network comprises a plurality of local line card modules configured to process information received at a plurality of speeds and formatted according to a plurality of protocols; a selectable number of local interconnect modules connected to the local line card modules and located proximate to each other and each including local transfer elements for transferring information between a plurality of local I/O channels and for transferring information between the plurality of local I/O channels and a plurality of non-local I/O channels; and an expanded interconnect module located proximate to the local interconnect modules and including coupling means for electrically coupling to the non-local I/O channels, and expanded transfer elements for transferring information between the local interconnect modules.

Tanabe et al. does not disclose or suggest the combination of features recited in claim 1. For example, Tanabe et al. does not disclose or suggest a plurality of local line card modules configured to process information received at a plurality of speeds and formatted according to a plurality of protocols.

The Examiner alleged that line interfaces 7 of Tanabe et al. correspond to a plurality of local line card modules (Office Action, page 2). Applicants respectfully disagree because nowhere does Tanabe et al. disclose or remotely suggest that the line interfaces 7 are configured to process information received at a plurality of speeds and formatted according to a plurality of protocols, as required by claim 1.

The Examiner alleged that Tanabe et al. discloses that line interfaces 7 process packets according to different bit rates, such as CBR, VBR, UBR, etc. (Office Action, page 2). Applicants disagree. There is no such disclosure in Tanabe et al. regarding packets of different bit rates (CBR, VBR, UBR, etc.). In fact, Tanabe et al. does not even mention bit rates, CBR, VBR, or UBR. Therefore, the disclosure of Tanabe et al. does not support the Examiner's allegation.

The Examiner admitted that Tanabe et al. does not disclose that line interfaces 7 process information formatted according to a plurality of protocols (Office Action, page 2). The Examiner alleged that IP/ATM networks are well known in the art and, therefore, it would have been obvious to include "a conversion module for converting data according to different formats in Tanabe's system, to take advantage of high bandwidth and QoS supplied by the ATM layer and support the idea of a homogeneous ATM network" (Office Action, page 2). Applicants

submit that the Examiner's motivation statement falls short of establishing a prima facie case of obviousness.

For example, the Examiner's motivation statement does not even allege that it would have been obvious to modify line interfaces 7 in Tanabe et al. to process information formatted according to a plurality of protocols, as would be required by claim 1. Therefore, the Examiner's motivation statement falls short of establishing a prima facie case of obviousness.

Further, even assuming that IP/ATM networks were well known in the art at the time of Applicants' invention, the Examiner's conclusion that this would have somehow motivated someone to modify the Tanabe et al. system to include a conversion module for converting data according to different formats finds no basis in fact. The Examiner's motivation that such a modification would take advantage of high bandwidth and QoS supplied by the ATM layer and support the idea of a homogeneous ATM network falls short of adequately explaining why one skilled in the art at the time of Applicants' invention would have modified the Tanabe et al. system in the manner suggested by the Examiner. Therefore, the Examiner's motivation statement falls short of establishing a prima facie case of obviousness.

Tanabe et al. also does not disclose or suggest a selectable number of local interconnect modules connected to the local line card modules and located proximate to each other and each including local transfer elements for transferring information between a plurality of local I/O channels and for transferring information between the plurality of local I/O channels and a plurality of non-local I/O channels, as further recited by claim 1.

The Examiner alleged that self-routing switches 3 in Tanabe et al. correspond to the selectable number of local interconnect modules (Office Action, page 3). Applicants respectfully disagree.

Nowhere does Tanabe et al. disclose or suggest that there are a "selectable number" of self-routing switches 3, as required by claim 1. Instead, Tanabe et al. discloses k self-routing switches (3-1 to 3-k) (Fig. 1). Nowhere does Tanabe et al. disclose or suggest that k is a selectable number.

Further, nowhere does Tanabe et al. disclose or suggest that self-routing switches 3 are located proximate to each other, as required by claim 1. The Examiner alleged that self-routing switches 3 are adjacently distributed (Office Action, page 3). Applicants disagree. Even though Tanabe et al. shows self-routing switches 3 as arguably proximate to each other in Fig. 1, they are not actually located proximate to each other. Tanabe et al. discloses that the switching system illustrated in Fig. 1 is a distributed type packet switching system (col. 1, line 66 - col. 2, line 6). It is apparent from the description of Tanabe et al., that local units 1 containing self-routing switches 3 are distributed across a network and, therefore, self-routing switches 3 cannot be alleged to be "located proximate to each other," as required by claim 1.

Tanabe et al. also does not disclose or suggest an expanded interconnect module located proximate to the local interconnect modules and including coupling means for electrically coupling to the non-local I/O channels, and expanded transfer elements for transferring information between the local interconnect modules, as further required by claim 1.

The Examiner alleged that tandem unit 2 of Tanabe et al. corresponds to the expanded interconnect module (Office Action, page 3). Applicants respectfully disagree.

Nowhere does Tanabe et al. disclose or suggest that tandem unit 2 is located proximate to self-routing switches 3 (which the Examiner alleged was equivalent to the local interconnect modules), as required by claim 1. Even though Tanabe et al. shows tandem unit 2 as arguably proximate to self-routing switches 3 in Fig. 1, they are not actually located proximate to each other. As explained above, Tanabe et al. discloses that the switching system illustrated in Fig. 1 is a distributed type packet switching system (col. 1, line 66 - col. 2, line 6). It is apparent from the description of Tanabe et al., that local units 1 containing self-routing switches 3 are distributed across a network from tandem unit 2 and, therefore, tandem unit 2 cannot be alleged to be "located proximate" to self-routing switches 3, as would be required by claim 1.

For at least these reasons, Applicants submit that claim 1 is patentable over Tanabe et al. Claims 2-11, 13-16, 18, and 19 depend from claim 1 and are, therefore, patentable over Tanabe et al. for at least the reasons given with regard to claim 1. Claims 2-11, 13-16, 18, and 19 are also patentable over Tanabe et al. for reasons of their own.

For example, claim 2 recites that the local transfer elements include means for synchronizing information transferred between each of the local transfer elements. Tanabe et al. does not disclose or suggest this feature.

The Examiner alleged that Tanabe et al. discloses that each of the local units includes a central controller for managing call processing control and call resource (Office Action, page 3). Even assuming that the Examiner's allegation is correct (a point that Applicants do not concede), nowhere does Tanabe et al. disclose or suggest that the central controller synchronizes information transferred between each of the local transfer elements, as required by claim 2.

For at least these additional reasons, Applicants submit that claim 2 is patentable over Tanabe et al.

Claim 3 recites that the expanded transfer elements include means for synchronizing information transferred between the local interconnect modules. Tanabe et al. does not disclose or suggest this feature.

The Examiner alleged that Tanabe et al. discloses that each of the tandem units includes a central controller for managing call processing control and call resource (Office Action, page 4). Even assuming that the Examiner's allegation is correct (a point that Applicants do not concede), nowhere does Tanabe et al. disclose or suggest that the central controller synchronizes information transferred between the local interconnect modules, as required by claim 3.

For at least these additional reasons, Applicants submit that claim 3 is patentable over Tanabe et al.

Claim 4 recites hot-swap means for changing the selected number of the local interconnect modules included in the interconnect network, while the interconnect network is transferring information. Tanabe et al. does not disclose or suggest this feature.

The Examiner admitted that Tanabe et al. does not disclose hot-swap means, but alleged that hot-swap means for replacing a number of switches while continuously transferring information on other switches is well known and, therefore, it would have been obvious to include hot-swap means in the Tanabe et al. system (Office Action, page 4). Applicants respectfully submit that the Examiner has provided absolutely no evidence to support the Examiner's broad allegation. If the Examiner persists with this rejection, Applicants request that the Examiner provide evidence to support the Examiner's broad allegation and provide a proper

motivation statement for modifying the Tanabe et al. system in the manner suggested by the Examiner.

For at least these additional reasons, Applicants submit that claim 4 is patentable over Tanabe et al.

Claim 5 recites that the local I/O channels have an associated priority and the interconnect network further comprises QoS means for transferring information from one of the local I/O channels having a relatively higher priority in preference to transferring information from one of the local I/O channels having a relatively lower priority. Tanabe et al. does not disclose or suggest these features.

The Examiner alleged that the Tanabe et al. system receives and processes packets according to different bit rates, such as CBR, VBR, UBR, etc., and it is known that CBR is given higher preference than other bit rates since it carries voice traffic (Office Action, page 4). Applicants respectfully submit that the Examiner's allegation finds no support in the Tanabe et al. disclosure. Tanabe et al. does not even mention bit rates, CBR, VBR, or UBR. Therefore, Tanabe et al. cannot disclose or suggest local I/O channels that have an associated priority or QoS means for transferring information from one of the local I/O channels having a relatively higher priority in preference to transferring information from one of the local I/O channels having a relatively lower priority, as required by claim 5.

For at least these additional reasons, Applicants submit that claim 5 is patentable over Tanabe et al.

Claim 11 recites redundancy generating means for generating an alternative version of information being transferred out of the interconnect network through the local I/O channels. Tanabe et al. does not disclose or suggest this feature.

The Examiner admitted that Tanabe et al. does not disclose redundancy generating means, but alleged that it is well known in the art to duplicate information for transferring to multiple destinations when multicasting and broadcasting (Office Action, page 6). Applicants respectfully submit that the Examiner's broad allegation finds no support in the Tanabe et al. disclosure. Tanabe et al. does not even mention multicasting or broadcasting. If the Examiner persists with this rejection, Applicants request that the Examiner provide evidence to support the Examiner's broad allegation and provide a proper motivation statement for modifying the Tanabe et al. system in the manner suggested by the Examiner.

For at least these additional reasons, Applicants submit that claim 11 is patentable over Tanabe et al.

Claim 13 recites that the interconnect network is adapted for transferring information as information cells, and the local transfer elements further include means for substantially simultaneously transferring a plurality of the information cells out of the local interconnect modules. Tanabe et al. does not disclose or suggest these features.

The Examiner alleged that Tanabe et al. discloses that the self-routing packet switching system routes ATM cells simultaneously among self-routing switches 3 and self-routing switches 4 (Office Action, page 6). Applicants respectfully submit that the Examiner's allegation finds no support in the Tanabe et al. disclosure. If the Examiner maintains this rejection, Applicants

request that the Examiner identify the portion of the Tanabe et al. disclosure that allegedly discloses the features recited in claim 13.

For at least these additional reasons, Applicants submit that claim 13 is patentable over Tanabe et al.

Claim 15 recites that the interconnect network is adapted for transferring information as information cells, and the expanded transfer elements further include means for substantially simultaneously transferring a plurality of the information cells out of the expanded interconnect module. Tanabe et al. does not disclose or suggest these features.

The Examiner alleged that Tanabe et al. discloses that the self-routing packet switching system routes ATM cells simultaneously among self-routing switches 3 and self-routing switches 4 (Office Action, page 6). Applicants respectfully submit that the Examiner's allegation finds no support in the Tanabe et al. disclosure. If the Examiner maintains this rejection, Applicants request that the Examiner identify the portion of the Tanabe et al. disclosure that allegedly discloses the features recited in claim 15.

For at least these additional reasons, Applicants submit that claim 15 is patentable over Tanabe et al.

Independent claim 20 is directed to a dynamically scalable communication interconnect. The interconnect comprises a selectable number of local interconnects, each including associated transfer elements for transferring information through the associated local interconnect; and a single expanded interconnect, including elements for coupling to the selected number of local interconnects, and expanded transfer elements for transferring information between the local

interconnects, wherein the selected number of local interconnects can be varied while the expanded interconnect is transferring information.

Tanabe et al. does not disclose or suggest the combination of features recited in claim 20. For example, Tanabe et al. does not disclose or suggest a selectable number of local interconnects, where each includes associated transfer elements for transferring information through the associated local interconnect.

The Examiner alleged that self-routing switches 3 in Tanabe et al. correspond to the selectable number of local interconnects (Office Action, page 3). Applicants respectfully disagree.

Nowhere does Tanabe et al. disclose or suggest that there are a "selectable number" of self-routing switches 3, as required by claim 20. Instead, Tanabe et al. discloses k self-routing switches (3-1 to 3-k) (Fig. 1). Nowhere does Tanabe et al. disclose or suggest that k is a selectable number.

Tanabe et al. also does not disclose or suggest that the selected number of local interconnects can be varied while the expanded interconnect is transferring information, as further recited in claim 20. The Examiner alleged that self-routing switches 4 of tandem unit 2 can communicate with one of self-routing switches 3 of a local unit or all of self-routing switches 3 of all local units simultaneously (Office Action, page 3). Applicants respectfully submit that the Examiner's allegation of what the Tanabe et al. system is possibly "capable" of doing falls short of establishing a prima facie case of obviousness with regard to claim 20. If the Examiner persists with this rejection, Applicants request that the Examiner identify the portion of the Tanabe et al. disclosure that supports the Examiner's allegation.

Nevertheless, even assuming that the Examiner's allegation is accurate (a point that Applicants do not concede), Applicants submit that nowhere does Tanabe et al. disclose or remotely suggest that the number of self-routing switches 3 can be varied while the self-routing switch 4 is transferring information, as would be required by claim 20.

For at least these reasons, Applicants submit that claim 20 is patentable over Tanabe et al.

Independent claim 22 is directed to an interconnect network for operation within a communication node. The interconnect network comprises a selectable number of local interconnect modules each including local transfer elements for transferring information between a plurality of local I/O channels and for transferring information between the plurality of local I/O channels and a plurality of non-local I/O channels; an expanded interconnect module including coupling means for electrically coupling to the non-local I/O channels, and expanded transfer elements for transferring information between the local interconnect modules; and quality of service means for differentiating between information coupled into the local I/O channels based on an associated priority of the information, and for indicating unavailability for receiving information having a particular associated priority on one or more of the local I/O channels.

Tanabe et al. does not disclose or suggest the combination of features recited in claim 22. For example, Tanabe et al. does not disclose or suggest a selectable number of local interconnect modules each including local transfer elements for transferring information between a plurality of local I/O channels and for transferring information between the plurality of local I/O channels and a plurality of non-local I/O channels.

The Examiner alleged that self-routing switches 3 in Tanabe et al. correspond to the selectable number of local interconnect modules (Office Action, page 3). Applicants respectfully disagree.

Nowhere does Tanabe et al. disclose or suggest that there are a "selectable number" of self-routing switches 3, as required by claim 22. Instead, Tanabe et al. discloses k self-routing switches (3-1 to 3-k) (Fig. 1). Nowhere does Tanabe et al. disclose or suggest that k is a selectable number.

Tanabe et al. also does not disclose or suggest quality of service means for differentiating between information coupled into the local I/O channels based on an associated priority of the information, and for indicating unavailability for receiving information having a particular associated priority on one or more of the local I/O channels, as further required by claim 22. The Examiner did not address this feature of claim 22 and, therefore, did not establish a prima facie case of obviousness with regard to claim 22.

With regard to claims 5 and 9, the Examiner alleged that the Tanabe et al. system receives and processes packets according to different bit rates, such as CBR, VBR, UBR, etc., and it is known that CBR is given higher preference than other bit rates since it carries voice traffic (Office Action, page 4). Applicants respectfully submit that the Examiner's allegation finds no support in the Tanabe et al. disclosure. Tanabe et al. does not even mention bit rates, CBR, VBR, or UBR. Therefore, Tanabe et al. cannot disclose or suggest quality of service means for differentiating between information coupled into the local I/O channels based on an associated priority of the information, and for indicating unavailability for receiving information

having a particular associated priority on one or more of the local I/O channels, as required by claim 22.

For at least these reasons, Applicants submit that claim 22 is patentable over Tanabe et al.

Independent claim 23 is directed to an interconnect network for operation within a communication node. The interconnect network comprises a selectable number of local interconnect modules each including local transfer elements for transferring information between a plurality of local I/O channels and for transferring information between the plurality of local I/O channels and a plurality of non-local I/O channels; and at least one expanded interconnect module including coupling means for electrically coupling to the non-local I/O channels, and expanded transfer elements for transferring information between the local interconnect modules. The interconnect network is adapted for transferring information as information cells, and the local and expanded transfer elements further include clumping means for substantially simultaneously transferring a plurality of the information cells.

Tanabe et al. does not disclose or suggest the combination of features recited in claim 23. For example, Tanabe et al. does not disclose or suggest a selectable number of local interconnect modules each including local transfer elements for transferring information between a plurality of local I/O channels and for transferring information between the plurality of local I/O channels and a plurality of non-local I/O channels.

The Examiner alleged that self-routing switches 3 in Tanabe et al. correspond to the selectable number of local interconnect modules (Office Action, page 3). Applicants respectfully disagree.

Nowhere does Tanabe et al. disclose or suggest that there are a "selectable number" of self-routing switches 3, as required by claim 23. Instead, Tanabe et al. discloses k self-routing switches (3-1 to 3-k) (Fig. 1). Nowhere does Tanabe et al. disclose or suggest that k is a selectable number.

Tanabe et al. also does not disclose or suggest that the local and expanded transfer elements include clumping means for substantially simultaneously transferring a plurality of information cells, as further recited in claim 23. The Examiner did not address this feature of claim 23 and, therefore, did not establish a prima facie case of obviousness with regard to claim 23.

With regard to claims 13 and 15, the Examiner alleged that Tanabe et al. discloses that the self-routing packet switching system routes ATM cells simultaneously among self-routing switches 3 and self-routing switches 4 (Office Action, page 6). Applicants respectfully submit that the Examiner's allegation finds no support in the Tanabe et al. disclosure. If the Examiner maintains this rejection, Applicants request that the Examiner identify the portion of the Tanabe et al. disclosure that allegedly discloses the features recited in claim 23.

For at least these reasons, Applicants submit that claim 23 is patentable over Tanabe et al.

Independent claim 24 is directed to a dynamically bandwidth scalable communication node. The communication node comprises a selectable number of local communication modules within the communication node that provide dynamic bandwidth scalability to the communication node, each of the local communication modules including a plurality of external communication channels for coupling information into and out of the node, a plurality of internal communication channels for coupling information within the node, and means for coupling

information between the external communication channels and the internal communication channels; a local interconnect module within the communication node, associated with each of the selectable number of local communication modules, and including local transfer elements for transferring information between the plurality of internal communication channels of the associated local communication module; and an expanded interconnect module within the communication node, including means for coupling to each of the local interconnect modules, and expanded transfer elements for transferring information between the local interconnect modules, thereby enabling transfer of information between external communication channels of different ones of the selectable number of local communication modules.

Tanabe et al. does not disclose or suggest the combination of features recited in claim 24. For example, Tanabe et al. does not disclose or suggest a selectable number of local communication modules within the communication node that provide dynamic bandwidth scalability to the communication node, each of the local communication modules including a plurality of external communication channels for coupling information into and out of the node, a plurality of internal communication channels for coupling information within the node, and means for coupling information between the external communication channels and the internal communication channels.

The Examiner alleged that self-routing switches 3 in Tanabe et al. correspond to the selectable number of local communication modules (Office Action, page 3). Applicants respectfully disagree.

Nowhere does Tanabe et al. disclose or suggest that there are a "selectable number" of self-routing switches 3, as required by claim 24. Instead, Tanabe et al. discloses k self-routing

switches (3-1 to 3-k) (Fig. 1). Nowhere does Tanabe et al. disclose or suggest that k is a selectable number.

Tanabe et al. also does not disclose or suggest a selectable number of local interconnect modules, a local interconnect module, and an expanded interconnect module that are all within a communication node. Instead, Tanabe et al. discloses that the switching system illustrated in Fig. 1 is a distributed type packet switching system (col. 1, line 66 - col. 2, line 6). It is apparent from the description of Tanabe et al., that local units 1 and tandem unit 2 are distributed across a network and, therefore, local units 1 and tandem unit 2 cannot be alleged to be "within the communication node," as required by claim 24.

For at least these reasons, Applicants submit that claim 24 is patentable over Tanabe et al.

Independent claims 25 and 26 recite features similar to features recited in claim 24. Claims 25 and 26 are, therefore, patentable over Tanabe et al. for reasons similar to reasons given with regard to claim 24.

In view of the foregoing amendments and remarks, Applicants respectfully request the Examiner's reconsideration of the application and the timely allowance of pending claims 1-26.

If the Examiner does not believe that all pending claims are now in condition for allowance, the Examiner is urged to contact the undersigned to expedite prosecution of this application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

Respectfully submitted,

HARRITY & SNYDER, L.L.P.

A handwritten signature in black ink, appearing to read 'PAUL A. HARRITY', written over a horizontal line.

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